

Appl. No. 10/666,188
Amdt. Dated 26 September 2005
Reply to Final Office Action of 2 August 2005

REMARKS/ARGUMENTS

This is responsive to the Final Office Action mailed on August 2, 2005. In the Final Office Action, claims 36, 37, and 39-47 were rejected under 35 USC §102 (b) as being anticipated by Hughes (U.S. Patent No. 5, 754,622).

Applicant respectfully traverses the rejection of claims 36, 37, and 39-47 under 35 USC §102 (b) as being anticipated by Hughes. Applicant reiterates respectfully that Hughes does not disclose the recitations of the independent claims 36, 44 and 45. With respect to claim 36, Hughes does not disclose recitations of (with emphasis added):

a collimator positioning apparatus configured to synchronize an adjustment of the geometry of an aperture with the movement of said radiation source and to coordinate the adjustment of the geometry of the aperture with the radiation source position so as to limit the incident radiation to a predetermined exposure area at said detector.

Similarly, with respect to claim 44, Hughes does not disclose recitations of (with emphasis added):

adjusting an aperture by synchronizing the aperture geometry adjustment with the movement of the radiation source and *“radiation beam emanating from said radiation source is collimated to limit the incident radiation to a predetermined exposure area at a radiation detector.*

Again, with respect to claim 45, Hughes does not disclose recitations of (with emphasis added):

a collimator comprising an adjustable geometry aperture assembly configured such that an adjustment of the geometry of an aperture is synchronized in time with respect to a movement of said radiation source and coordinated in space with respect to the radiation source position so as to limit the incident radiation of the tomosynthesis system to a predetermined exposure area at said detector.

Hughes appears to describe a technique for verifying radiation delivered to an object (column 2, lines 46-47). Specifically, Hughes describes a technique whereby the amount of radiation exiting the object is measured via a detector and this information (exit dose information) is used to verify the radiation treatment (column 4, lines 30-45). Nowhere does Hughes disclose, teach, or suggest the *synchronization* of the aperture geometry with the radiation source as recited in the independent claims 36, 44 and 45. In fact, Hughes appears to be completely devoid of any discussion about *synchronization or timing* either explicitly or impliedly. Further, with respect to limiting the radiation, as mentioned in the previous Office Action response, Hughes describes "plates" in one embodiment as being mounted between the radiation source and the patient to delimit the radiation such that it more accurately irradiates the imaging field (column 3, lines 56-64). "Imaging field" is described in Hughes as the *area of the patient* that is irradiated (column 3, line 54, also column 5, lines 20-25).

Thus, Hughes merely teaches *Irradiating only a specific area in the anatomy, without exposing other areas to a substantial amount of radiation, and is completely devoid of any disclosure, teaching, or suggestion leading to the aperture geometry being synchronized in time with respect to the radiation source and is similarly devoid of any disclosure, teaching or suggestion about limiting the radiation at the detector as is recited in the independent claims 36, 44 and 45.*

From the "Response to Arguments" section of the Final Office Action (page 4), Applicant notes that the Examiner suggests that Hughes describes a multi-leaf collimator, and the radiation beam is modulated by the multi-leaf collimator as the radiation beam rotates about the rotation angle. The Examiner further suggests that

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Hughes discloses that at each gantry angle the radiation beam *incident at the patient* is modulated by adjusting the positions of the collimating leaves of the multileaf collimator (emphasis added). The Examiner then makes the conclusion that the adjustment of the geometry of the aperture is synchronized with the rotation of radiation source. Applicant respectfully disagrees with this conclusion. The only teaching from the above text in Hughes is that the radiation beam is modulated by a collimator at each gantry angle. **This does not, in any way, imply that the two movements, of the radiation source and the aperture adjustment are synchronized in time.** Applicant therefore respectfully submits that nothing in the text that the Examiner has highlighted in this section or in his rejections (column 4, lines 3-13 or column 3, lines 54-66 of Hughes), discloses, teaches or suggests the "synchronizing" aspect as recited in the independent claims 36, 44, and 45 and as explained in Applicant's detailed description on page 7 and page 10.

Further, regarding the recitations of limiting the radiation at the detector, the Examiner seems to be of the opinion that detectors, generally speaking, are used to measure the exit dose delivered to the patient and therefore, the exit dose necessarily has to be limited at the detector otherwise the measurement will not be accurate. Applicant respectfully submits that optimizing the detector area is in itself a technically challenging field and the statement that the detectors generally function in this manner is oversimplifying the issue. Applicant draws the attention of the Examiner at the drawings and description related to Figures 4-6 in the Applicant's application in this respect, where the above problem has been discussed. Applicant, therefore, reiterates that **prior approaches which limit radiation on the patient do not "necessarily" include synchronized adjustments of the aperture geometry to limit the incident radiation on the detector as claimed.**

Accordingly, Applicant respectfully submits that independent claims 36, 44 and 45 define allowable subject matter over the applied art. Claims 37, 39-43, depend directly or indirectly from claim 36, and claims 46 and 47 depend directly or indirectly from claim 45 and hence are similarly allowable. Withdrawal of the rejections is respectfully requested, and allowance of the claims 36, 37, 39-47 is respectfully solicited.

In view of the foregoing, Applicant respectfully submits that the application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are respectfully requested. Should the Examiner believe that anything further is needed to place the application in even better condition for allowance, the Examiner is requested to contact applicant's undersigned representative at the telephone number below.

Respectfully submitted,

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